



Pre-seismic radio anomaly observed on the occasion of the MW=6.5 earthquake occurred in Crete on October 12, 2013

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On October 12, 2013 an earthquake with $M_w=6.5$ occurred in the southern Hellenic Arc, about 20km off the west coast of Crete. The mainshock, whose focal depth is of the order of 40km, was followed by aftershocks felt in the nearby cities and villages, even though the aftershock sequence was rather poor. The epicenter is located at about 60 km from the CRE receiver of the European VLF/LF Radio Network. Some day before the earthquake a clear disturbance appeared in one of the ten radio signals sampled by the CRE receiver. The disturbance, considered as an anomaly, appears in the 216 kHz radio signal radiated by the transmitter MCO that is the main broadcasting facility for long and medium wave broadcasting of Radio Monte Carlo near Roumoules, France. The site is an exclave of Monaco and extraterritorial area. The signal radiated by MCO transmitter can be well received, mainly at night time, in whole Europe. The radio path MCO-CRE crosses exactly the epicenter area of the previous earthquake. Here we present a detailed study of the anomaly by means of statistical and spectral tools and analyze also the behavior of other sampled radio signals in the European network, and take into account other possible causes of disturbances. We conclude that the possibility that the disturbance in the MCO radio signal is a precursor of the earthquake is rather convincing.